

ROOT-KNOT NEMATODE INFECTION TO CITRUS

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Damage by root-knot nematodes (Meloidogyne spp.) to many plants ranks high among that caused by plant parasitic nematodes; however, infection to Citrus spp. is rare. The first report of citrus infection due to root-knot nematode Meloidogyne arenaria (Neal) Chitwood was from Florida in 1899. During the growth of the citrus industry in Florida there is no evidence to support a threat of root-knot nematodes to species of citrus. Based on the infective potential of root-knot nematodes on other hosts in Florida, a biotype of Meloidogyne capable of infecting and reproducing on citrus could be a serious problem.

Worldwide, the species of Meloidogyne reported to infect Citrus spp. include the Asiatic pyroid citrus nema; M. exigua Goeldi, M. incognita (Kofoid and White) Chitwood, M. indica Whitehead, and M. javanica (Treub) Chitwood.

Distribution and Damage Caused by Reported Species

In 1959 the Asiatic pyroid citrus nema was reported to attack citrus in Taiwan and India. Although no taxonomic description of this species has appeared, those working with this nematode indicate that it resembles Meloidogyne africana Whitehead. The Asiatic nematode originally was recovered from Citrus sinensis (L.) Osbeck and C. reticulata Blanco var. austera Swing. Successful transfers of the nematode were also made to C. sinensis 'Sha Kan' and 'Wango', C. grandis (L.) Osbeck 'Wanbongru' and C. aurantium L. 'Chu Lan'. Galls produced on citrus by this nematode are spherical to elongate. Egg masses are deposited externally on the root epidermis.

Meloidogyne exigua is reported to infect citrus in Surinam and Guadeloupe. Meloidogyne exigua reproduces on Citrus sp. and is reported to be more serious in soil previously planted to coffee.

In Australia severe damage to roots of sweet orange, C. sinensis has been caused by infection of M. incognita. In greenhouse tests the population produced terminal root swellings on Poncirus trifoliata (L.) Raf.; however, no egg masses were produced. Galls and adult females without egg masses were found on sour oranges in Italy.

Meloidogyne indica is known to infect Citrus spp. only and causes gall formation. Egg masses are produced by adult females. This species is known only from India.

Meloidogyne javanica (fig. 1) is reported to invade citrus in California, U.S.A.; Israel; and Italy; however, reproduction by this nematode on citrus has been observed only in California. It is believed that failure of M. javanica to reproduce on citrus is probably due to the lack of syncytia (giant cells) production following nematode invasion and feeding.

Discussion

Only in isolated instances are root-knot nematodes known to reproduce on citrus hosts. Although citrus is a poor host for the reproduction and survival, the feeding action by these nematodes can result in damage to citrus roots. There would be cause for concern if a root-knot nematode biotype capable of infecting and reproducing on citrus should become established in Florida. Root-knot nematodes are another group of plant-parasitic nematodes which could become a threat to Florida citrus.



Fig. 1. Galls on roots of 'Troyer' citrange (Citrus sinensis X Poncirus trifoliata) produced by root-knot nematode, Meloidogyne javanica. (Photo furnished by Dr. Renato Inserra, Laboratory Di Nematologie Agraria, Bari, Italy.)

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